

NASA's Robotics Mining Competition Provides Undergraduates Full Life Cycle Systems Engineering Experience

Jonette Stecklein

National Aeronautics and Space Administration

Mail Stop XM, Johnson Space Center, Houston, Texas 77058, U.S.A.

281-244-7146

jonette.m.stecklein@nasa.gov

Abstract. NASA has held an annual robotic mining competition for teams of university/college students since 2010. This competition is yearlong, suitable for a senior university engineering capstone project. It encompasses the full project life cycle from ideation of a robot design to actual tele-operation of the robot in simulated Mars conditions mining and collecting simulated regolith. A major required element for this competition is a Systems Engineering Paper in which each team describes the systems engineering approaches used on their project. The score for the Systems Engineering Paper contributes 25% towards the team's score for the competition's grand prize. The required use of systems engineering on the project by this competition introduces the students to an intense practical application of systems engineering throughout a full project life cycle.